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it is worthy of notice that, while the geodes are always surrounded by material rich in alumina, no crystallized forms of this mineral have yet been discovered in them. Geodes of fine quality occur in Missouri, and Prof. White reports calcareous geodes, some of them entirely free from silica, in a soft magnesian lime-stone, in North Eastern Iowa.

Any one who for the first time sees a fine geode and notes its regular form, its uncouth exterior and brilliant interior is sure to ask "How was it made?" The more specimens he sees the more is his curiosity excited, and if he visits the locality and sees them *in situ* his wonder and interest increase to the highest pitch. There are very many difficulties to be overcome in trying to account for the presence of the geodes and their formation, and it may be only presumption to attempt that which so many skilful mineralogists have passed in silence. However, a careful study of the geodes, both in cabinets and in their native bed, has convinced me that they must have been formed in some such manner as that here presented. What now constitutes the geode bed, was at one time a mass of plastic clay filled with siliceous and calcareous fluids. That it was plastic is shown by facts obvious to any one who has ever visited the locality. If now this mass were acted upon by steam or some other vapor, or gas, as dough is acted upon by carbonic acid, it would like the dough be filled with cavities of all sizes of a more or less spherical form, and irregularly distributed through the mass. Into these cavities the solutions of silica etc. would filter and in some cases crystallize, in others simply deposit the solids held in solution, according to circumstances. The form, arrangement, etc., of the various substances would be determined, I suppose, by their densities and the laws of crystallization. After all the materials had hardened, the soft brittle clay would easily separate from the harder filling of the cavities and this would then fall out shaped by the mould in which formed.

REVIEWS.

THE PEABODY MUSEUM OF AMERICAN ARCHÆOLOGY AND ETHNOLOGY.* — The fourth annual Report contains much that is of general interest. Professor Wyman, the curator, gives some exceedingly valuable "Observations on Crania and the parts of the Skeleton," with comparative measurements of the fifty-six skulls from Peru, presented by Mr. Squier, together with thirty-eight from the mounds of Kentucky, obtained by Mr. Lyon, and eighteen from the mounds of Florida collected by the curator. He remarks that:—

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*Fourth Annual Report of the Trustees of the Peabody Museum of American Archæology and Ethnology. Boston, 1871. 8vo. p. 27.

> "The average capacity of the fifty-six Peruvian crania measured agrees very closely with that indicated by Morton and Meigs, viz., 1230 c.c., or 75 cub. inches, which is considerably less than that of the barbarous tribes of America, and almost exactly that of the Australians and Hottentots as given by Morton and Meigs, and smaller than that derived from a larger number of measurements by Davis. Thus we have, in this particular, a race which has established a complex civil and religious polity, and made great progress in the useful and fine arts, as its pottery, textile fabrics, wrought metals, highways and aqueducts, colossal architectural structures and court of almost imperial splendor prove, on the same level as regards the quantity of brain, with a race whose social and religious conditions are among the most degraded exhibited by the human race.
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> All this goes to show and cannot be too much insisted upon, that the relative capacity of the skull is to be considered merely as an anatomical and not as a physiological characteristic, and unless the quality of the brain can be represented at the same time as the quantity, brain measurement cannot be assumed as an indication of the intellectual position of races any more than of individuals. From such results the question is very naturally forced upon us whether comparisons, based upon cranial measurements of capacity as generally made, are entitled to the value usually assigned them. Confined within narrower limits they may perhaps be of more importance. But even in this case the results are often contradictory. If the brains of Cuvier and Schiller were of the maximum size, so were those of three unknown individuals from the common cemeteries of Paris—while that of Dante was but slightly above the mean, and Byron's was probably even below it."

He also refers to the singular perforations of the humerus, which seems to occur in white, Indian and black races, but more commonly in the blacks; it is also quite general though not constant in the apes.

The flattening of the tibia has been noticed in the reindeer period in Europe, and Professor Wyman finds that it prevails largely, but in a variable degree in our Indians. In regard to the bearings of these facts on the relations of man to the apes we quote as follows: —

> "From a comparison of the skeleton of the human races, as far as made, it is quite clear that in several respects some of them have peculiarities which seem to assimulate them to the apes. These peculiarities are not, however, confined to a single race, but are distributed in different degrees through several, and it is not improbable that future studies will show a still greater variety of resemblances, and a wider distribution of them, than is now known. The increased length of the forearm, as compared with the humerus, is almost equally shared by the blacks and the recent Indians. The Indians, from the mounds of various parts of the country, as well as the inhabitants of the ancient cave dwellings of Europe, have the flattened tibia. The Indians, ancient as well as modern, in common with the Hawaiian Islanders, have the most backward position of the foramen magnum, while the Negro, on the other hand, with his lengthened forearm, has this foramen almost as central as in the white man. The small brain is not, as might at first well be supposed to be the case, found in the most degraded races alone, but in these, in common with a race which had, as already stated, risen to a semi-civilization; nor is it constantly associated with the lengthened forearm, since in the Australians this is even shorter than in the white man. From these results it seems obvious that we cannot give to the alleged resemblances between the human races and the apes their full meaning, until we have much wider comparisons than have as yet been made."

THE POSITION OF THE CADDIS FLIES.* — This paper, containing detailed descriptions with excellent illustrations, may be regarded, as the author remarks, as the continuation of several memoirs on exotic Trichoptera published in the "Transactions" of the Entomological Society of London. Quite a number of the species are from California, one is from the White Mountains, another from Newfoundland, another from New York, while the remainder are from other parts of the world. The descriptions of genera and species are elaborated with the author's usual care and thoroughness, and great attention is paid to the illustration of details of structure, which gives the paper a lasting value.

We are also indebted to the author for his views on the systematic position of the Trichoptera, and for a very courteous criti-

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*On new Forms, etc., of Extra-European Trichopterous Insects. By Robert McLachlan. Extracted from the Linnæan Society's Journal.—Zoology. Vol. xi. London, 1871. 8vo. pp. 43, with 3 plates.